z/OS Installation

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The Installation Tape

Review the *Report of Tape Creation* that accompanies the release package before restoring the release data to disk. Information in this report supersedes the information in this documentation.

The installation tape contains the following data sets in the sequence indicated in the report:

Data Set	Contents
COR*vrs*.LOAD	COR load modules
COR*vrs*.INPL	SYSCOR INPL file
COR*vrs*.ERRN	SYSCOR error messages file
COR*vrs*.SRCE	Source modules
COR*vrs*.JOBS	Installation jobs
COR*vrs*.SYSF	Base configuration file
COR*vrs*.LX01	When used with Adabas Version 8.2.2 or below, the supplied COR*vrs*.LX01 library is required. This contains the COR Version 8.2 database components (ADAPOx, AFPADA, AVIADA). This library must be added to the start of the load library concatenation in all database startup procedures, replacing the equivalent modules in the Adabas library. If the Adabas nucleus is running with APF-authorization the LX01 library must also be APF-authorized.

where *vrs* in data set names represents the version, revision, and system maintenance level of the product.

Installation Overview

The steps needed for a successful installation are as follows:

Step	Description	Required	Job Name
1	Restore the libraries from the installation tape	Yes	
2	Load (INPL) the SYSCOR application	Yes	CORI061
3	Load the configuration file and prepare SYSCOR	Yes	CORI050
4	Assemble the configuration module	Yes	CORI055
5	Add the System Coordinator to the Adabas clients	Yes	CORI060, CORI080x
6	Define the System Coordinator group and daemons	Required if a COR daemon is to be used	
7	Install the CICS node error program (optional)	Optional	
8	Create startup procedures for the Adabas System Coordinator daemons	Required if a COR daemon is to be used	
9	Create System Coordinator daemon disk files	Optional, depending on which products are installed and how they are configured.	CORI040
10	Define runtime controls for Client jobs and TP systems	Optional	

System Programming Considerations

In a multi-systems environment a Coordinator daemon is normally defined for each system. In a parallel sysplex daemons use the IBM XCF facility to communicate. All COR daemons are defined (in the COR configuration file) with the same group name, and this name is used as the XCF group name. The group name selected must be unique to the COR daemon group, and must *not* be the same as the group name (CLUGROUPNAME) selected for any Adabas Cluster Services database.

The Adabas System Coordinator daemon must execute:

- from an authorized load library; and

- at a higher priority than the TP monitors, databases, and jobs it is used to coordinate.

Installation Procedure

Following is the general Adabas System Coordinator installation procedure. The actual installation depends on your particular requirements and the specific contents of the release package provided by Software AG for your site. Information in the release package is intended for your system. If that information differs from the information in this section, use the release package information or contact Software AG technical support for assistance.

Step1: Copying the Tape Contents to Disk

If you are using System Maintenance Aid (SMA), refer to the SMA documentation (included on the current edition of the Natural documentation CD). If you are not using SMA, perform steps 1a, 1b and 1c as described in this section:

- Step 1a: Copy Data Set COPY.JOB from Tape to Disk
- Step 1b: Modify COPY.JOB
- Step 1c: Submit COPY.JOB

Note:
If the data sets for more than one product are delivered on the tape, the data set COPY.JOB contains the JCL to unload the data sets for all delivered products from the tape to your disk. After that, you will have to perform the individual install procedure for each component.

Step 1a: Copy Data Set COPY.JOB from Tape to Disk

The data set COPY.JOB (label 2) contains the JCL to unload all other existing data sets from tape to disk. To unload COPY.JOB, use the following sample JCL:

```
//SAGTAPE JOB SAG,CLASS=1,MSGCLASS=X
//* -------------------------------
//COPY EXEC PGM=IEBGENER
//SYSUT1 DD DSN=COPY.JOB,
// DISP=(OLD,PASS),
// UNIT=(CASS,,DEFER),
// VOL=(,RETAIN,SER=<Tnnnnn>),
// LABEL=(2,SL)
//SYSUT2 DD DSN=<hilev>.COPY.JOB,
// DISP=(NEW,CATLG,DELETE),
// UNIT=3390,VOL=SER=<vvvvvv>,
// SPACE=(TRK,(1,1),RLSE),
// DCB=*.SYSUT1
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//

where:

<hilev>  is a valid high level qualifier
<Tnnnnn> is the tape number
<vvvvvv> is the desired volser
```

Step 1b: Modify COPY.JOB

Modify the COPY.JOB to conform with your local naming conventions and set the disk space parameters before submitting this job:

- set HILEV to a valid high level qualifier

- set LOCATION to a storage location

- set EXPDT to a valid expiration date

Step 1c: Submit COPY.JOB

Submit COPY.JOB to unload all other data sets from the tape to your disk.

Step 2: Load (INPL) the SYSCOR Application (Job I061)

Use sample job CORI061 to load the SYSCOR online administration and error messages file into Natural.

Step 3: Load the Configuration File and Prepare SYSCOR (Job I050)

System Coordinator and related products operate according to definitions contained in the configuration file. You must allocate a new Adabas file for the Version 8.2 configuration file and load CORvrl.SYSF into it using the supplied sample job CORI050. The online services will guide you through the steps required to make the new file ready for use, including conversion from previous versions of System Coordinator.

▶ To load the configuration file

1. Load the Adabas System Coordinator configuration file from the distribution tape using the standard Adabas load utility ADALOD. Use sample job CORI050. If you are using an alternate configuration file you need to run this job to initialize both files.

2. If Natural Security is installed, define the libraries SYSCOR and SYSMP*vrs* (where *vrs* is the version you are installing, for example 821) and protect as required. You may define MENU as the startup transaction for SYSCOR. DO NOT define a startup transaction for SYSMP*vrs*.

3. Use the following parameter to define the Natural session where SYSCOR is to be used:

   ```
   LFILE=(152,dbid,fnr<,passw><,ciph>)
   ```

   where *dbid* and *fnr* define the primary Adabas System Coordinator file.

   Alternatively, assemble the Natural parameter module with:

   ```
   NTFILE ,ID=152,DBID=dbid,FNR=fnr
   ```

▶ To convert a previous version's definitions to version 8 format

1. Logon to library SYSCOR and enter MENU. SYSCOR will detect that the configuration file is new and will guide you through the steps required to copy and convert the definitions from a previous version.

2. Repeat this procedure for each configuration file to be converted. The procedure only needs to be done once for each configuration file, regardless of how many products use it. Other products may have additional conversion requirements.

Step 4: Assemble the Configuration Module (Job I055)

Adabas System Coordinator parameters are located in the configuration file. At job start, the Adabas System Coordinator needs to know the location of this file. This information is kept in the configuration module.

Create the configuration module by assembling the CORMCFG parameters defining the SVC, database, and file number of the Adabas System Coordinator configuration file.

Keyword	Description
SVC=	Your installation's Adabas SVC number
DBID=	Database number for the System Coordinator configuration file
FNR=	File number for the System Coordinator configuration file
ADBID=	Database number for the alternate System Coordinator configuration file. If not specified, an alternate file will not be used.
AFNR=	File number for the alternate System Coordinator configuration file. If not specified, an alternate file will not be used.
SF148=WAIT	Use this keyword if you want client jobs to wait when the specified configuration file is not active. If you omit this keyword, the RETRY= setting takes effect (see below).
CRITICAL=	Use this keyword if you want System Coordinator to check for availability and correct functioning of supported add-on products. You may specify one or more of the following, separated by commas: • AVI - AdabasVista • AFP - Adabas Fastpath • ATM - Adabas Transaction Manager If any critical product is not functioning correctly, all Adabas requests will be rejected with response code 101, subcode 59.
DMWAIT=	Specifies a maximum time (in minutes) that the System Coordinator daemon will wait for the configuration file database to be activated. If not specified, the daemon will wait indefinitely. The default is 60.

Keyword	Description
ZOSDUMP=	This option applies to z/OS installations only and determines the style of dump the System Coordinator daemon produces, in the event of an abnormal termination. The default, ABEND, produces a standard operating system dump to SYSUDUMP, SYSABEND or SYSMDUMP. SVC produces an SVC dump on the system dump datasets. This can often be quicker than producing a standard dump. The daemon issues message: COR037I SVC dump created and the operating system writes messages to the system log to identify the dump dataset. If the SVC dump fails for any reason, the daemon issues message: COR038E SVC dump failed, R15: hhhhhhhh and a standard dump is produced.
RETRY=	RETRY specifies the frequency (number of Adabas calls issued in this client job) at which System Coordinator in the client job will retry access to its configuration file after a response 148. The default is 1000. Client services provided by System Coordinator and its supported add-on products are not available until the configuration file becomes active. RETRY only takes effect if SF148=WAIT has not been specified.

Name the resulting load module CORCFG (this is required).

Use sample job CORI055.

Step 5: Add the System Coordinator to the Adabas Client (Jobs I060, I080x)

Link the appropriate Adabas System Coordinator client component with your Adabas link modules.

The stub modules are called CORS0*n* where *n* is a subsystem suffix.

The modified link module is for use by client jobs only.

Adabas System Coordinator is compatible with Version 8 link modules. You must re-assemble the LNKGBLS table, specifying the parameter COR=YES in the LGBLSET macro.

The load library contains the kernel modules CORKRN and CASKRN, which must also be available to all client jobs that will use the Adabas System Coordinator.

If you are migrating from a previous version, you must ensure that you use the new load library modules. It is not possible to use the Version 8.2 link module stub with Coordinator modules from a previous version. If you need to run multiple versions in a TP monitor client, please see the Versioning Tool section for more information.

Notes:

1. You must use the linkage editor options specified in the sample jobs.
2. Before running the sample jobs, cross-check the list of Adabas link-edit include statements supplied with base Adabas for ADALNK and ADALNKR. Comply with any changes that have appeared in base Adabas since the information here was supplied.

Job Type	Stub Module	Sample Job
Batch/TSO	CORS01	CORI060
Com-plete	CORS02	CORI080C
CICS Command Level	CORS03	CORI080B **Note:** If you are installing under CICS, the Coordinator modules can be loaded either from the DFHRPL or the STEPLIB libraries. Software AG recommends that you use DFHRPL. If you are not using the CICS program autoinstall feature, you will need to define the Coordinator Client modules (CORKRN, CASPXY, CASKRN), and the configuration module (CORCFG) to CICS. All of the modules should be defined with the following characteristics: Language: Assembler ; RELoad :No ; DAtalocation: Any ; EXECKey : User. A sample job, CORI080R, is supplied in the installation JOBS library. **Note:** For CICS, ensure that the LUSAVE parameter in the Adabas link module is set to at least 72. Software AG recommends that you also use the XWAIT=YES parameter.
IMS	CORS05	CORI080G
Multi-task Batch (for Software AG products Natural RPC Server, Adabas SOA Gateway, Adabas SQL Gateway)	CORS07	CORI080H **Note:** See section Installing Adabas System Coordinator in multi-task batch environments.
Other 3rd party or in-house multi-task server environments.	CORS07	CORI080H **Note:** See section Installing Adabas System Coordinator in 3rd party or in-house multi-task server environments.

Job Type	Stub Module	Sample Job
Triggers and Stored Procedures **Note:** Define a System Coordinator runtime control of type "SPATs". The SPATs option is on the second screen of selectable runtime control types, accessible by selecting "more choices for type or" when adding the runtime control.	CORS08	CORI080S **Note:** You must ensure that this ADALNK is used **only** by Adabas nuclei running Triggers and Stored Procedures and is not used in any client job or Coordinator daemon.

Step 6: Define a System Coordinator Group

Define your System Coordinator group and member(s). This is required if you intend to use:

- Adabas Fastpath

- clustered applications with dynamic transaction routing.

Job parameters for each product also contain settings that are relevant to the operation of the Adabas System Coordinator. For more information, see SYSCOR Administration.

Step 7: Install the CICS Node Error Program (Optional)

The node error program CORNEP is used by sites running CICS command-level applications in CICS/ESA or CICS Transaction Server for z/OS. It is not an essential component, but it does improve efficiency when reclaiming user memory after user sessions terminate.

CORNEP must be called as a started task (with Transaction ID ANEP) from the real CICS node error program DFHZNEP. If you do not use DFHZNEP, a sample is provided on the source library. If you do use DFHZNEP, you will need to implement the code for starting CORNEP into your own DFHZNEP as shown in the provided sample source.

Following are the required CICS resource definition parameters for CORNEP:

```
Language: Assembler
RESident: No
Datalocation: Any
EXECKey: User
```

Note:
To use CORNEP, assemble your Adabas link module with `PARMTYP=ALL` on the ADAGSET (Version 7 link module) or LGBLSET (Version 8 link module) macro.

Note:
CORNEP must be called only from DFHZNEP.

Step 8: Create Startup Procedures for the System Coordinator Daemon(s)

The following is a job example for running a Adabas System Coordinator daemon:

```
//SYSCO1 PROC
//*------------------------------------------------------------*
//* System Coordinator SYSCO Vv.r.s. STARTUP *
//*------------------------------------------------------------*
//SYSCO1 EXEC PGM=SYSCO,REGION=0M,TIME=1440
//STEPLIB DD DISP=SHR,DSN=SAG.CORvrs.LOAD
// DD DISP=SHR,DSN=ADABAS.Vvrs.LOAD
//SYSUDUMP DD SYSOUT=*
//CORDUMP DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//DDPRINT DD SYSOUT=*
//DDCARD DD DISP=SHR,DSN=SAG.CORvrs.SRCE(CORCNTL)
//*
```

The file referenced by the DDCARD statement should contain the following control statements:

```
PRODUCT=CAS
```

```
PRODUCT=AFP (If FASTABM is to be run)
```

```
FORCE=NO
```

If SYSCO terminates abnormally, it may be necessary to specify `FORCE=YES` on restart.

Step 9: Create System Coordinator daemon disk files

Some products require a daemon disk file. This is described in the relevant product documentation. Tailor and run job CORI040 to create each required disk file. Examples of products for which you might need to create disk files are:

- System Coordinator's latency file for latency management of TP systems.

- Adabas Transaction Manager's recovery file.

Step 10: Define Runtime Controls for Client Jobs and TP Systems

System Coordinator can be installed for all client jobs, but will be inactive until runtime controls are defined. Controls are defined in the SYSCOR Natural application, using the Maintenance menu. Refer to the Online Services section for further information.

Alternatively, you can delay this task until you have installed the appropriate add-on product(s). You may then use any of the supplied maintenance applications (SYSAFP, SYSAVI or SYSATM).

Installing Adabas System Coordinator in multi-task batch environments

Multi-task batch environments have special requirements. These are discussed below for the most common environment types.

- Installing the Adabas System Coordinator with the Adabas SQL Gateway in z/OS

- Installing Adabas System Coordinator with Natural RPC Batch Server with NTASKS > 1

- Installing Adabas System Coordinator with the Adabas SOA Gateway

- Installing Adabas System Coordinator in 3rd party or in-house multi-task server environments

Installing the Adabas System Coordinator with the Adabas SQL Gateway in z/OS

Background

The Adabas SQL Gateway uses z/OS UNIX Systems Services to run as a multi-threaded server. This requires re-entrant operation which has additional installation considerations for products based upon Adabas System Coordinator such as Adabas Fastpath, Adabas Vista and Adabas Transaction Manager. Specifically, it is important that a single copy of the Adabas Link Module (ADALNKR) containing the System Coordinator interface (CORS07) is used, and that this module is linked with the attributes specified in the sample CORI080H job.

The Adabas SQL Gateway uses z/OS UNIX Systems Services to run either in basic or authorized multi-threaded server mode. This choice affects the method of installation of the Adabas System Coordinator as the base for Adabas Fastpath, Adabas Vista, Adabas Transaction Manager, etc.

Specifically, it is important that a single copy of the Adabas Link Module (ADALNKR) containing the System Coordinator interface (CORS07) is used, and that this module is linked as specified in the sample CORI080H job.

There are two ways to run the Adabas SQL Gateway which directly affect the way Adabas System Coordinator must be installed:

- Basic multi-thread (not APF authorized): When the Adabas SQL Gateway runs without APF authorization it does not activate its low-level RACF interface.

- Authorized multi-thread (APF authorized): In its authorized state the Adabas SQL Gateway activates its RACF interface.

Common Installation Steps

▶ **The following steps are required for both installation types:**

1. Complete normal SQL Gateway installation (and make sure it works correctly in isolation) before adding the System Coordinator interface. (See the *Installation for z/OS* section of the Adabas SQL gateway documentation).

2. Assemble the Adabas Link routine globals module LNKGBLS and link ADALNKR using sample job CORI080H.

3. Modify the Server Job CNXADA. Include the Coordinator load library, plus any installed add-on product libraries (Fastpath, Vista, ATM), in the STEPLIB concatenation. For the authorized installation, all libraries must be APF-authorized.

4. Define the SQL Gateway started task as job type multi-TCB to the desired product(s) in the appropriate administration center: Adabas System Coordinator (SYSCOR), Adabas Fastpath (SYSAFP), Adabas Vista (SYSAVI) and/or Adabas Transaction Manager (SYSATM). See the relevant product documentation for details. The Multi-TCB option is on the second screen of selectable runtime control types, accessible by selecting "more choices for type or" when adding the runtime control.

Basic Multi-Thread (not APF authorized) Install

 ▶ **for this type of operation:**

1. Ensure that SQL Gateway basic multi-thread installation is completed before adding the System Coordinator interface.

2. Re-link the module named CNXRUNA with the REUS attribute, replacing ADALNK with ADAUSER. Here is a sample of the required JCL:

```
//LKED    EXEC PGM=IEWL,PARM='REUS'
//ADALIB   DD DSN=ADABAS.VVRS.LOAD,DISP=SHR   ... Adabas library ...
//SYSLMOD  DD DSN=PPP.CONNX.LOAD,DISP=SHR     ... Connx Library ...
//SYSPRINT DD SYSOUT=*
//SYSLIN   DD *
 REPLACE ADABAS           ... Delete ADALNK entry ...
 INCLUDE SYSLMOD(CNXRUNA)
 INCLUDE ADALIB(ADAUSER)
 ENTRY MAIN
 NAME CNXRUNA(R)
/*
```

The Linkage Editor will produce warning messages indicating that some Csects are not re-usable. These can be ignored.

3. Re-link the module named CNXADA0B with the REUS attribute, replacing ADALNK with ADAUSER. Here is a sample of the required JCL:

```
//LKED    EXEC PGM=IEWL,PARM='REUS'
//ADALIB   DD DSN=ADABAS.VVRS.LOAD,DISP=SHR   ... Adabas library ...
//SYSLMOD  DD DSN=PPP.CONNX.LOAD,DISP=SHR     ... Connx Library ...
//SYSPRINT DD SYSOUT=*
//SYSLIN   DD *
 REPLACE ADABAS              ... Delete ADALNK entry ...
 INCLUDE SYSLMOD(CNXADA0B)
 INCLUDE ADALIB(ADAUSER)
 ENTRY MAIN
 NAME CNXADA0B(R)
/*
```

The Linkage Editor will produce warning messages indicating that some Csects are not re-usable. These can be ignored.

Do *not* specify the RENT atrribute for either of these modules. The linked modules must be re-usable but not re-entrant. Failure to do this will result in the System Coordinator failing with S0C4 (addressing) abends.

Authorized Multi-Thread Install

▶ for this type of operation:

1. Ensure that SQL Gateway authorized multi-thread installation is completed before adding the System Coordinator interface.

2. Re-link the module named CNXRUNA with the RENT and AC=1 attributes, replacing ADALNK with CORLNKR. Here is a sample of the required JCL:

```
//LKED    EXEC PGM=IEWL,PARM='RENT,AC=1'
//CORLIB   DD DSN=SAG.CORVRS.LOAD,DISP=SHR   ... COR library ...
//SYSLMOD  DD    DSN=PPP.CONNX.LOAD,DISP=SHR  ... Connx Library ...
//SYSPRINT DD    SYSOUT=*
//SYSLIN   DD    *
 REPLACE ADABAS          ... Delete ADALNK entry ...
 INCLUDE SYSLMOD(CNXRUNA)
 INCLUDE CORLIB(CORLNKR)
 ENTRY MAIN
 NAME CNXRUNA(R)
/*
```

3. Re-link the module named CNXADA0B with the RENT and AC=1 attributes, replacing ADALNK with CORLNKR. Here is a sample of the required JCL:

```
//LKED    EXEC PGM=IEWL,PARM='RENT,AC=1'
//CORLIB   DD DSN=SAG.CORVRS.LOAD,DISP=SHR   ... COR library ...
//SYSLMOD  DD    DSN=PPP.CONNX.LOAD,DISP=SHR   ... Connx Library ...
//SYSPRINT DD    SYSOUT=*
//SYSLIN   DD    *
 REPLACE ADABAS          ... Delete ADALNK entry ...
 INCLUDE SYSLMOD(CNXADA0B)
 INCLUDE CORLIB(CORLNKR)
 ENTRY MAIN
 NAME CNXADA0B(R)
/*
```

Installing Adabas System Coordinator with Natural RPC Batch Server with NTASKS > 1

The client component CORS07 must be used. CORS07 must be linked with the re-entrant Adabas link module (ADALNKR), using the sample job CORI080H.

The resulting load module should be named according to the requirements of Natural RPC Server (for example, ADALNKR) and should be linked with the attributes specified in the sample job. Check the product documentation for specific information on what it is called.

A runtime control of type Multi-TCB must be defined for the Natural RPC Batch Server job. The Multi-TCB option is on the second screen of selectable runtime control types, accessible by selecting "more choices for type or" when adding the runtime control.

Installing Adabas System Coordinator with the Adabas SOA Gateway

The client component CORS07 must be used. CORS07 must be linked with the reentrant Adabas link module (ADALNKR), using the sample job CORI080H.

The resulting load module should be named according to the requirements of the Adabas SOA Gateway (for example, ADALNKR) and should be linked with the attributes specified in the sample job. Check the product documentation for specific information on what it is called.

A runtime control of type Multi-TCB must be defined for the Adabas SOA Gateway job. The Multi-TCB option is on the second screen of selectable runtime control types, accessible by selecting "more choices for type or" when adding the runtime control

Installing Adabas System Coordinator in 3rd party or in-house multi-task server environments

This section applies to 3rd party and customer-written multi-task batch applications designed to use the re-entrant Adabas link module. Note: Quite obviously, these types of environments are unknown to Software AG so the information here is only a guideline on what may be appropriate, the specifics of what is actually appropriate are dictated by the design of the server in question. Therefore you must check with Software AG in case there are any other considerations before implementing.

The client component CORS07 must be used. CORS07 must be linked with the reentrant Adabas link module (ADALNKR), using the sample job CORI080H.

The resulting load module should be named according to the requirements of the application (for example, ADALNKR) and should be linked with the attributes specified in the sample job. Check the product documentation for specific information on what it is called.

A runtime control of type Multi-TCB must be defined for the multi-task batch job. The Multi-TCB option is on the second screen of selectable runtime control types, accessible by selecting "more choices for type or" when adding the runtime control.

Usually, the server application must ensure that either:

- the task which causes the COR environment to initialize (usually the first task to issue an Adabas call) stays active for the duration of the job

or

- the load modules required for the product are pre-loaded by a task which stays active for the duration of the job. The modules required for COR are listed above (under Job Type CICS Command Level) and each product names its required modules in the section Before You Install: Installation Under CICS.